

METROPOLITAN AIRPORT PLAN



**VANCOUVER
TOWN PLANNING COMMISSION**

AUGUST, 1946



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A PRELIMINARY REPORT

UPON

AN AIRPORT
PLAN

Metropolitan Area of Vancouver

BRITISH COLUMBIA

TOWN PLANNING COMMISSION

VANCOUVER, BRITISH COLUMBIA



HARLAND BARTHOLOMEW AND ASSOCIATES

TOWN PLANNERS

MARCH, 1946

PRICE, \$0.25



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317 NORTH ELEVENTH STREET
SAINT LOUIS, MISSOURI

30th March, 1946.

Town Planning Commission,
Vancouver, British Columbia.

Gentlemen:

In accordance with our agreement we are pleased to present the following report upon an Airport Plan for the metropolitan area of Vancouver. The objective of this report is a system of air terminals adequate to meet future needs and properly related to the other component parts of the future urban area.

The successful operation of the commercial and industrial enterprises that comprise the economic basis of Vancouver is dependent upon efficient transportation facilities. Air transportation will be of increasing importance to Vancouver in the future. Only by following a long range plan can the metropolitan area take full advantage of this new form of transportation.

The problem of proper provision of air terminals is not alone that of the City of Vancouver. The other communities comprising the metropolitan area are also affected and there should be considerable Provincial and Dominion interest in the problem. This further emphasizes the necessity for a plan that can be generally agreed upon by all concerned.

We are presenting a similar report to the City of New Westminster as a part of the planning programme of that community.

Respectfully submitted,

HARLAND BARTHOLOMEW AND ASSOCIATES

By ELDRIDGE LOVELACE.

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INTRODUCTION

The airplane is a new form of transportation. The development of both Canada and the United States has been influenced to a very large extent by the development of different forms of transportation. Water transportation, the railways, and the automobile have each asserted a compelling influence. The airplane can also be expected to have a great effect.

Air transportation had a rapid growth before the war and the many war-inspired improvements have advanced this form of transportation much faster than would otherwise have been the case. Largely due to the war, we now not only have greatly improved airplanes, but also a large number of persons highly trained in the construction, servicing and operation of aircraft as well.

There will be many changes in the techniques of aircraft construction and operation in the future as in the past. These changes are most difficult to predict; all that we can be certain of is that this form of transportation will see many great improvements during the course of the next two or three decades. This makes difficult the planning of terminal facilities and the adjustment of this form of transportation to the urban community, which changes gradually and slowly.

This modern medium of transportation can be expected to supplement and complement, but not to replace the older forms of transportation. The automobile took considerable business from the railroad but the railroads remain the major transportation medium. Similarly, the airplane will affect but will not replace other forms of transportation. As each new form of transportation has been developed, it has caused a large volume of new transportation movements. Most of the use of air transportation can be expected to come from this category.

Each new form of transportation comes into being because it possesses certain fundamental advantages. The chief advantage of air transportation is its speed. The major disadvantages, all of which are now being overcome, have been relative undependability, greater hazard, and higher cost.

The airplane has proven itself an excellent medium for the movement of relatively small numbers of persons and small volumes of commodities over long distances at high rates of speed. In the future as in the past, its principal uses can be expected to be (1) movement of passengers, (2) movement of mail, (3) movement of perishable and light-weight commodities, wherein the time saving element is of great importance. The ownership and use of aircraft, however, can be expected to have a diversification similar to the automobile. There will be many non-scheduled commercial operations carried on by small companies or by individuals.

Many farmers will own airplanes as they now own trucks. There will be numerous private planes owned and operated by individuals and used as much, if not more, for recreation than for business, as is the case with the automobile at the present time.

The airplane requires terminal facilities only and needs no expensive right-of-way improvements as is the case of the railroad and the automobile. The volume of movement of aircraft in any urban area will be limited, however, by the terminal facilities provided on the ground—the airports. Movement of aircraft, particularly movement of smaller planes used for non-scheduled operations and for private flying, will be influenced by bad weather and by low visibility conditions which restrict landings and take-offs at the terminals.

Past experience has indicated the difficulty of adapting existing urban areas to new forms of transportation. In all forms of transportation, development of the vehicle has always been ahead of the development of the facilities over which the vehicle operates. We now have trains which can operate at much higher speeds than the existing tracks can withstand safely. Virtually all of our automobiles are designed to operate at higher speeds than is feasible on our present street and highway systems. This is the natural course of events, as a new type of vehicle must prove itself before expensive facilities are prepared for it. It will be natural that, no matter how much vision and foresight is used, airport development will lag behind the development of aircraft. If air transportation is to be of maximum usefulness, however, this lag in time must be kept to a minimum.

Transportation is particularly important to the Vancouver-New Westminster metropolitan area—which is the major Pacific seaport for Canada. Vancouver is the western terminus of the two transcontinental rail lines of Canada. It has a strategic location in relation to the entire country, which location, and the transportation that has developed, have accounted for a large part of the past growth of the community. This strategic location becomes even more important in the development of air transportation. The Vancouver-New Westminster metropolitan area can be expected to be the major Pacific port of entry for Canada for international air lines from the Orient and Australia. At the present time air lines connect Vancouver with all large cities in the United States and Canada. It can be expected that there will be considerable domestic and international air service through Vancouver, and that the location of the city will require the maintenance of a certain number of military aircraft for national defence. In addition, British Columbia contains exceedingly rugged terrain, which has made most difficult the development of railroad and highway transportation. It can be expected that even the smaller communities of British Columbia will provide air fields so that the deficiencies in these older forms of transportation may be compensated by the use of air transportation. In many cases, it can be expected that seaplanes will be used and that these will land on the lakes and large rivers which are scattered throughout the Province, thus making unnecessary the provision of airports which, in many cases, would be difficult and costly to construct. A very large increase in

the number of private planes can be expected, not only those owned by persons living in Vancouver, but also those owned by non-resident persons coming to Vancouver as tourists and sportsmen.

The use that will be made of this new form of transportation in the metropolitan area will be dependent upon the terminal facilities provided. More than one or two large airports will be needed. There must be a system of airports, both large and small, to serve the diversified types of air traffic that may be expected. The site of the metropolitan area possesses two serious disadvantages in the development of air terminals. Airports, particularly those accommodating the larger aircraft, require relatively large areas of flat land, sometimes as much as three or four square miles. In the metropolitan area, the only natural areas of relatively flat ground are found along the delta lands of the Fraser River. Where the ground is flat, it is low and subject to frequent fogs. The combination of frequent fogs and rugged topography makes the provision of air terminals most difficult.

It is thus most essential that a plan be prepared and definite steps taken for acquisition and development of airport sites. The number of places where airports may be developed is severely limited. Use of the few available sites for some other purpose would be most unfortunate. In addition, the airport problem is not a local problem, it is not the problem of the City of Vancouver alone or of any other adjacent municipality alone. It is a metropolitan problem which has Provincial, Dominion, and International ramifications. It is, consequently, most essential that all the interests involved agree upon a specific plan in order that each agency may contribute the utmost possible to the attainment of a satisfactory system of air terminals.

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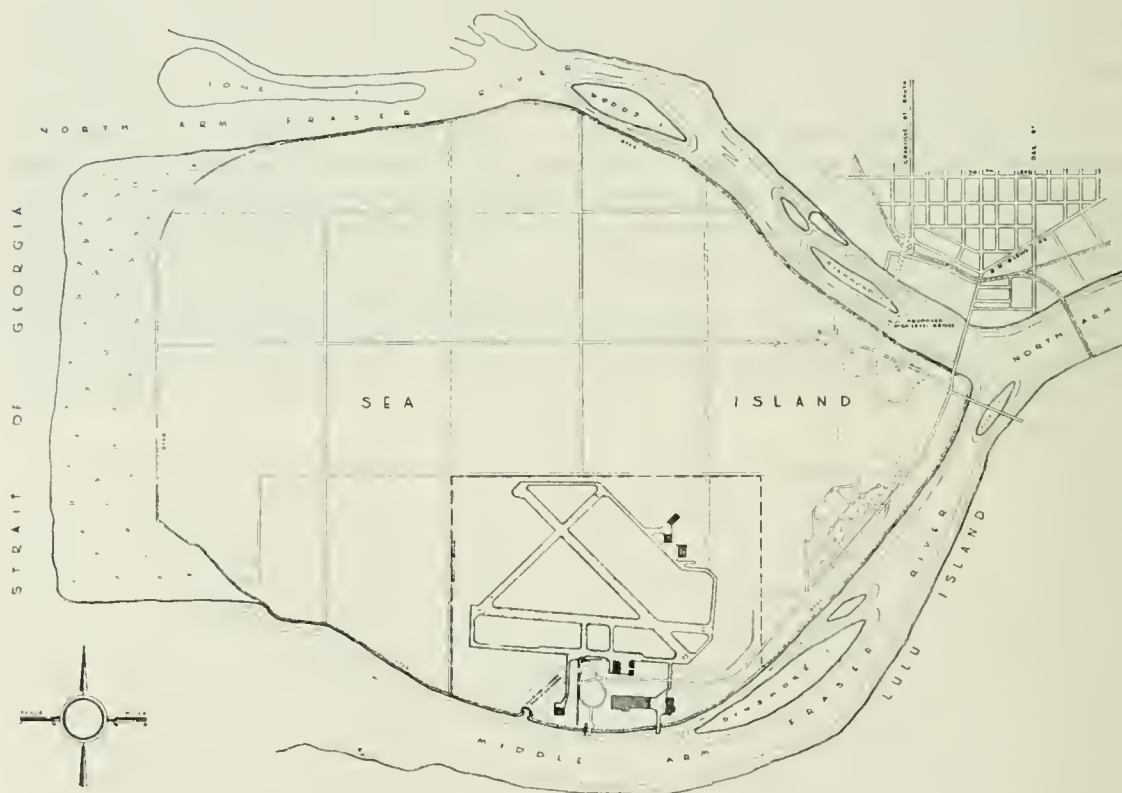


Plate 1

PRESENT STATUS OF AVIATION

The first flight of an airplane in Vancouver apparently took place in March, 1910. There were quite a number of flights during and after World War I. In 1928, a company known as British Columbia Airways purchased a Ford tri-motor airplane and carried on service from Vancouver to Victoria and Seattle. This company rented a forty-acre field immediately north of Lansdowne Park on Lulu Island for use as a landing field. The City of Vancouver then leased this property and erected a small hangar. In May, 1929, a \$300,000 by-law was passed for the purchase of land for an airport for the City of Vancouver. In December, 1929, another by-law was passed for a like sum for the development of the airport. The Vancouver Airport has since been developed on Sea Island. This airport now contains 700 acres, an administration building and hangar facilities, and three runways, 5,007; 5,170, and 3,805 feet long. (See Plate Number 1.)

At the present time the only other airport in the metropolitan area, apart from the Royal Canadian Air Force's seaplane base at Jericho, on English Bay, a purely military operation, is the Boundary Bay Airport located south of the Fraser River, which field is owned and operated by the Department of National Defence. This field contains three paved runways 200 feet wide and more than 6,000 feet long. The total area of the field is approximately one and one-half square miles.

Scheduled air service to Vancouver has had a phenomenal growth. At the present time the City is serviced by Canadian Pacific Air Lines, Trans-Canada Air Lines, and United Air Lines. There are forty plane movements per day (landings and take-offs) of scheduled aircraft. The number of passengers carried on scheduled flights has increased from 800 in the year 1934 to 25,100 in the year 1940. Scheduled passengers per year quadrupled between 1940 and 1945, being 103,845 for the year 1945. (See Chart Number 1).

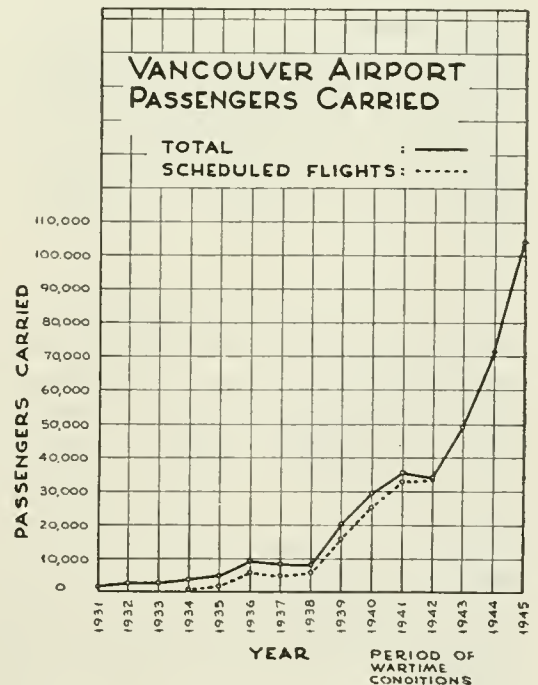


Chart 1.

The volume of air mail has also increased every year. It amounted to only 4,776 pounds in 1935, increased to almost 348,000 pounds in 1940, exceeded 1,000,000 pounds in 1943 and 1944, and was 920,523 pounds in 1945. (See Chart Number II). The decrease in air mail poundage in 1944 and 1945 can be largely attributed to the fact that most of Canada's armed forces had been moved overseas by this time, and airgraph and blue air mail letters, much lighter in weight than the ordinary air mail letter, then took the place of the latter. The number of pieces of mail has increased yearly.

The increase in the amount of air express has not been as spectacular as the increase in air mail. There has been a considerable increase, however—from 1,169 pounds in 1934 to 80,700 pounds in 1940 and then to 272,477 pounds in 1945. (See Chart Number III). The drop in air express in 1944 may be explained by the changed conditions as compared with 1943. During that year many thousands of personnel of the armed forces were in training in Canada and air express parcels were continuously being sent back and forth between them and their relatives and friends. When the forces were moved overseas the parcels were then forwarded by parcel post or ordinary express. Moreover, in 1942 and 1943, there was a large air express business to Northern British Columbia, Yukon and Mackenzie where large projects, such as the Alaska Highway, Canol pipeline, airports, etc., were then under construction. In 1945, it will be noted that there was a very large increase.

The number of scheduled and

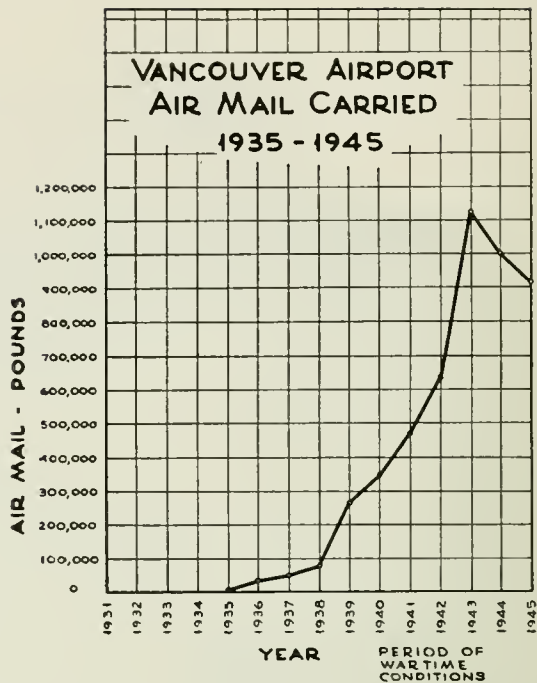


Chart II.

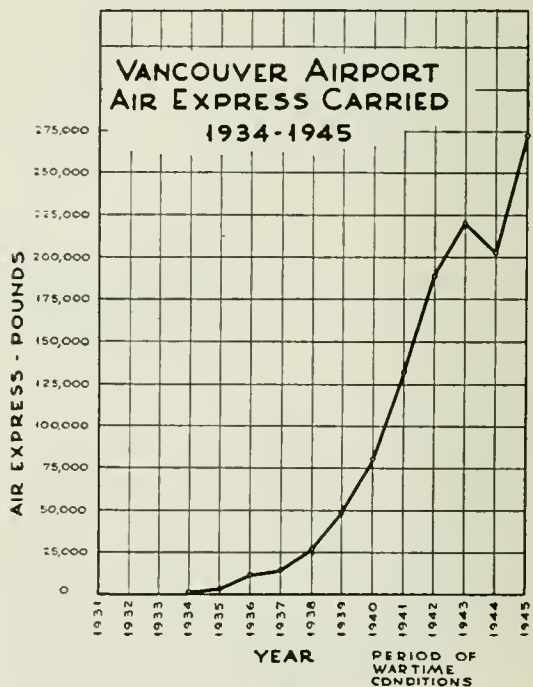


Chart III.

non-scheduled landings in the Vancouver Airport has also greatly increased. In 1931 there were 2,861 landings. This gradually increased to a total of 39,901 in 1945. (See Chart No. IV).

During the war years the number of landings was increased considerably by military operational flights. In the year 1941, the Vancouver Airport was used for training, and for a while landings averaged 700 per day, there being a total of 135,516. At the end of the year the Air Training School was moved to another station. The slight decrease in landings was occasioned by the Royal Canadian Air Force changing its training on small aircraft at stations near Vancouver (which included many landings at the airport) to training on larger types of bombers, with a consequent reduction in the number of aircraft in use and therefore, fewer landings. The operations carried out clearly demonstrated the capability of the administrative staff and the capacity of the Airport for commercial operations in the future. At an average of 18 landings per day there would be 6,570 landings of scheduled aircraft at the Vancouver Airport in a year. For 1945, however, there was a total of 39,901 landings, indicating that some four-fifths of the use of this field consisted of non-scheduled operations. (See Chart Number IV).

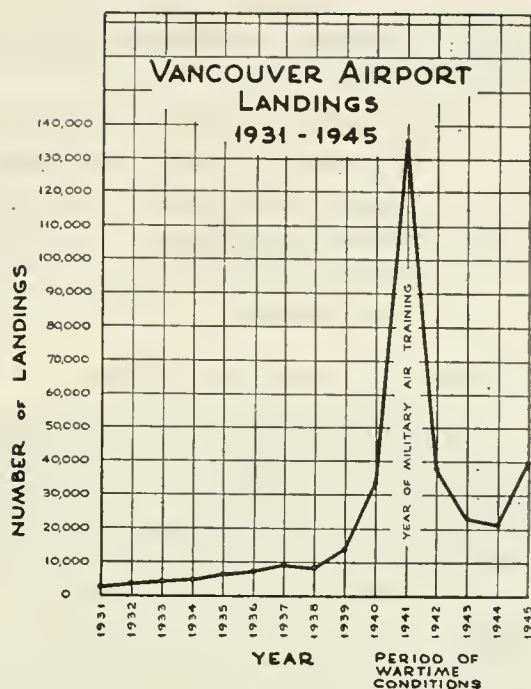


Chart IV.

POSSIBILITIES FOR FUTURE GROWTH

With a large number of persons qualified to fly and with the large production capacity of all types of aircraft, large increases in private flying as well as in commercial air transportation can be expected. Prices of planes will be reduced, air express will be more widely used, air freight lines will be established, and air passenger traffic will increase. Introduction of the helicopter may even transform certain phases of urban and interurban transportation.

It is most difficult to forecast precisely the rate of this future expansion. Studies have been made in a number of American cities and attempts made to make a precise forecast of the future amount of air transportation. No exact estimates of this type have been made in Vancouver. Instead, the number of airports possible was found to be so limited by the topography of the ground and adverse physical features that would be detrimental to plane operation, as to make these

factors the dominant considerations. This section of the Report does, however, include a general discussion of the possibilities for future growth in air transportation.

There are five major classifications of air transportation:

1. Scheduled operations for passengers, mail, and express.
2. Non-scheduled commercial operations.
3. Military operations.
4. Pilot training.
5. Private flying.

SCHEDULED OPERATIONS

There is no question but that there will be a great increase in the number of scheduled air passengers in Vancouver in the future. In addition to carrying passengers, the volume of air mail can be expected to increase also. Transportation of mail by air now takes place in the same planes that carry passengers. It is quite possible that in the near future a large portion of the first class mail will be transferred to the air. This would create a volume of mail sufficient to require additional planes to perform this service alone. In areas where airports are not available and where the volume of mail would not justify a landing, it is possible that mail would be collected by small planes using a recently perfected device enabling them to pick up mail while in flight. There will be also an increase in the volume of air express and air freight. Some of the air lines in the United States now have planes exclusively devoted to cargo flights. When, to the increase in domestic scheduled air transport, is added the flights to the Orient and Australia, it would seem that a considerable, probably a tenfold, increase can be anticipated in scheduled flights in Vancouver in the next twenty years.

NON-SCHEDULED COMMERCIAL FLYING

As shown in the preceding section, there is much more non-scheduled flying than scheduled flying. Some of this can be expected to be of a commercial nature. There will be planes owned and used by commercial and industrial establishments in Vancouver, particularly for delivery of materials to mining areas in the northern part of Canada and Alaska. There will be many planes that will be used for special travel such as chartered trips to conventions and sporting events, emergency hospital trips, and other reasons. There will be planes owned and used by farmers, produce houses, dairies and the like, for transporting products. There will be many scheduled and non-scheduled sight-seeing trips which could very well become an important activity in Vancouver in the future. The testing, repairing and sale of aircraft can be expected to become an important business. Also there will be many persons who will know how to fly but who will not have sufficient means to own an airplane and who will use rented planes.

As in the case with scheduled flying, it is most difficult to anticipate the volume of this non-scheduled commercial traffic. However, it is believed that this will be between two and three times as large as the scheduled traffic.

MILITARY FLYING

It is believed that there will be sufficient military activity, both in training and in the national defence, to require at least one military airport in the Vancouver area.

TRAINING

In the future there will be a great number of persons interested in learning to fly. It is believed that there will be a sufficient number of such persons to require one or two small airports exclusively devoted to this purpose.

PRIVATE FLYING

The use of small private planes increased greatly in the three years before the war. Cost of such planes had been reduced and their safety features greatly improved. In 1941, they retailed for approximately \$2.50 per pound, eight times the cost of an automobile. Reduction of their cost to \$1.00 per pound appears feasible. Although their cost per pound would still be three times that of the automobile they may sell for less because of their comparatively low weight.

An obstacle to the more common use of the private plane in the past has been the long distances to be travelled from a person's home to the airport. Use of the helicopter would overcome many of the disadvantages of the private plane, particularly if satisfactory landing areas can be developed for the helicopter within the city. The helicopter differs from other types of aircraft in that it rises and descends by means of a large horizontally powered propeller and is able to go backward as well as forward in the air, remain stationary while aloft, and arise and descend vertically. It can travel slowly and safely at low altitudes and in poor weather. It can be expected, however, that it will be some time before the helicopter is perfected for common use. At the present time it is expensive to build and operate and quite difficult to fly. It is believed possible, however, that these difficulties may be overcome and the helicopter perfected within five or ten years. This would cause a great increase in private flying.

It will, however, be expensive to own and operate a private plane and there will be few families having an income of less than \$3,000 who will be able to afford to own and operate their own aircraft. A careful analysis was made in the metropolitan area of Saint Louis, Missouri, as to the number of private planes that might be in operation by 1960. The result of this analysis was that there might be as many as one plane for each 200 persons as of that date with about half of these being helicopters. This ratio is probably quite optimistic. It is believed that one private plane for each 500 to 1,000 persons in the Vancouver-New Westminster metropolitan area by 1970 would be a reasonable estimate. This would result in 650 to 1,300 private planes by 1965. Since some 300 planes can be accommodated on one small airport it would seem reasonable to provide for at least two and preferably four or five minor airports to accommodate private flying in any airport plan for the metropolitan area.

PROPOSED AIRPORT PLAN

TYPES AND CAPACITIES OF AIRPORTS

The number of planes that can be accommodated at an airport is dependent upon the regulations for safety that are imposed. These regulations must be most rigorous. Aircraft accidents are serious enough in any event but can become disastrous if they occur over an urban area. Operation of all aircraft is consequently subject to stringent regulations.

When there are large numbers of planes making landings and take-offs at one airport, the landing of one small, slow plane might consume the time required for the landing of two or three larger and faster planes. As traffic increases it will be essential to separate the traffic and to have the large planes land on the big airports with the long runways and the small planes land on small fields. Since there will be so much air traffic that it cannot all be accommodated on one or two airports, it seems sensible to plan for separations of traffic so that each type of aircraft uses a type of field designed to meet its particular needs.

During the periods of congestion of airports, planes waiting to land, circle the field. As the size of the plane becomes larger the circle it makes also becomes larger in order for the craft to remain on a relatively even keel with a minimum of disturbance to the cargo and passengers. During a very busy time at an airport there may be a great number of planes circling the field waiting to land. If two airports were located close to each other the two groups of circling planes might conflict. It is thus most essential that the utmost consideration be given to this factor in the location of airports. Congestion of air traffic is very seldom found on the ground, but quite often found in the air. The greatest hazard in flying is in landing and taking-off, therefore air terminals must be carefully designed to provide the utmost in safety.

1. THE MAJOR AIRPORT. This type of terminal would be used for scheduled operations of transcontinental and foreign air transports handling freight, express, mail, and passengers. It would be used mainly by the larger types of planes, and one airport in Vancouver must be developed for the accommodation of the very largest planes used for overseas operations. Because of this one airport sufficient land should be acquired to permit runways 10,000 feet in length arranged in accordance with the major wind directions and designed for instrument landings. For a major airport that would handle transcontinental and regional scheduled aircraft, runways of 7,500 feet in length would be satisfactory. The major airports will require a landing area of between 2,000 and 3,300 acres. There should be 1,000 feet between the ends of the runways and the property lines. The runway grades should be $1\frac{1}{2}$ per cent or less and there should be an unobstructed glide angle from

the end of the runways of at least fifty to one. Such a field would be lighted for night landings and would have all the necessary communication facilities and, if possible, there should be railroad facilities. Furthermore, it would have an operating radius for traffic control of at least four miles and preferably six miles, that is, no other airport should be located closer than four and preferably six miles to the field. A design for a typical major airport is shown on Plate Number 2.

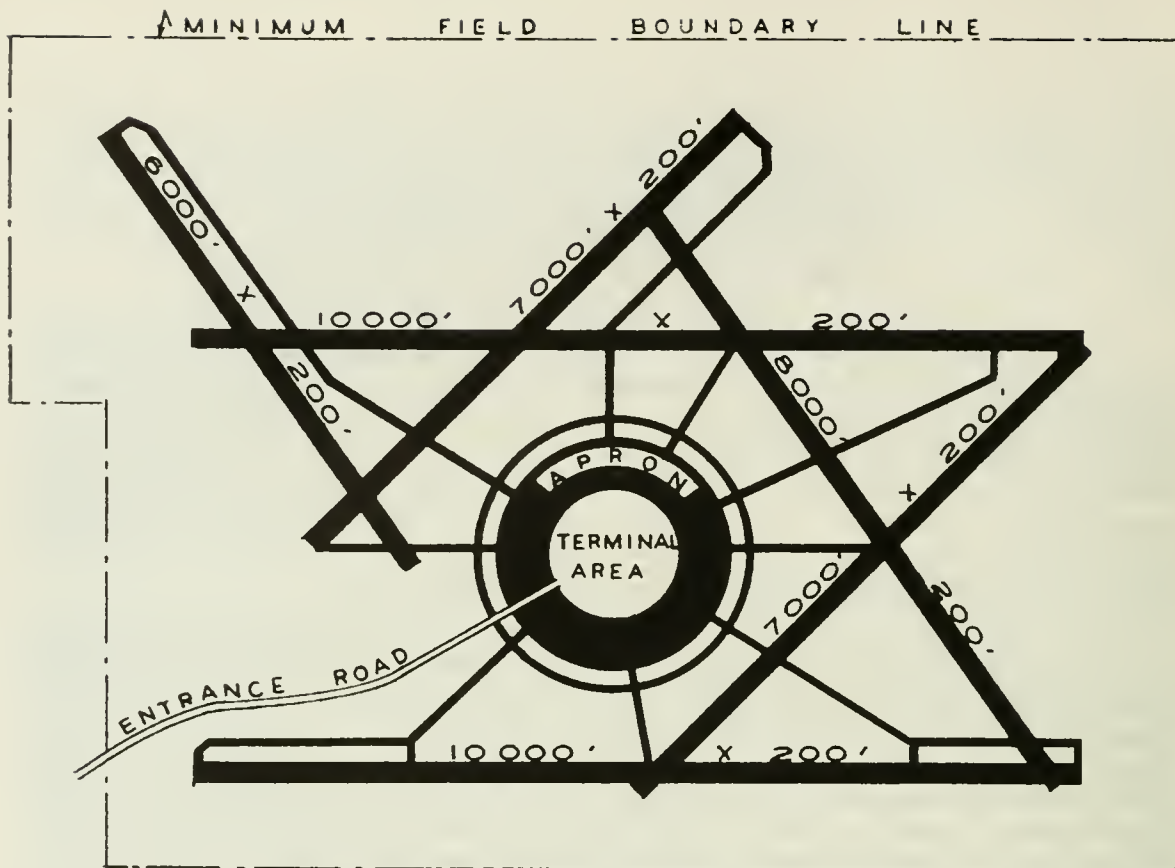
2. THE SECONDARY AIRPORT. This type of field would be used for non-scheduled commercial planes and for larger private planes. It might be used also to some extent for regional air transportation of freight and express. Runways would be 4,000 feet in length. There would be 750 feet between the end of the runways and the property lines, and the site would require an area of between 600 and 700 acres. Such a field would be lighted for night flying and it would have communication facilities. There should be no other airport within four or five miles and the secondary airport should not be located closer than six miles to a major airport. Plate Number 3 shows a typical secondary airport.

3. THE MINOR AIRPORT. This type of field would be used for private flying and instruction purposes, and the smaller planes would be accommodated. Runways would be 2,000 feet long and there would be 250 feet between the ends of the runways and the property lines. These fields would have an area of between 80 and 200 acres. They would have a large number of hangars for storage of private planes and administration facilities, but the runway, drainage, lighting and other improvements would be held to a minimum since most of the flying would be done during favorable weather conditions. The minor airport should not be located closer than from four to five miles to a secondary airport and six miles to a major airport. A typical plan for a minor airport is shown on Plate Number 4. During the period covered by this plan it may be necessary to develop a fourth type of landing field. This would be a terminal for the helicopter. While the helicopter can land in a very small space, even in the yards of homes having large lots, it would not be feasible to land these craft promiscuously throughout the more intensively developed areas of cities. While landings can be made on flat roofs, the use of existing buildings for this purpose is questionable. There would always be danger in poorly calculated landings and storage problems in the more congested areas. A typical landing field for helicopters that might be developed within the urban area is shown on Plate Number 5.

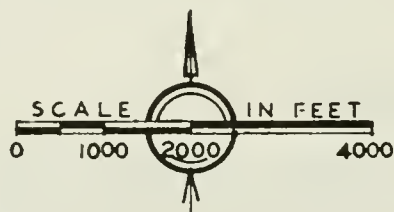
CAPACITIES OF AIRPORTS

Experience with the operation of different types of airports has generally indicated their capacity. Airports are similar to highways in that traffic using them becomes quite heavy during a few rush hours. The usual experience has been that approximately one-sixth of the daily use of a field takes place during a peak hour.

For major and secondary airports the capacity is dependent upon the runway system. With single runways the capacity is usually considered to be 40 plane

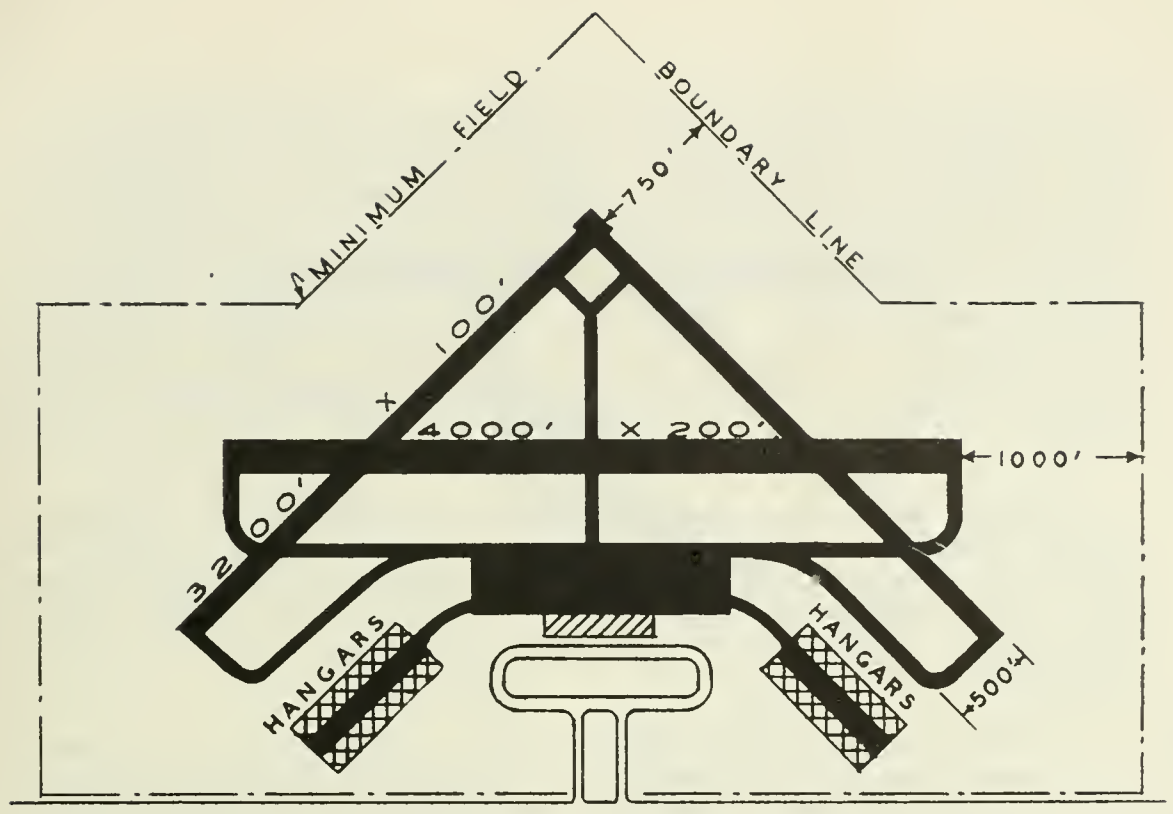


TYPICAL MAJOR AIRPORT

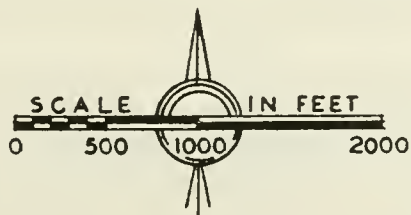


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TYPICAL SECONDARY AIRPORT



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movements per hour. This can be increased when the weather conditions are favorable, but when the weather conditions are not favorable and the planes must be largely dependent upon instruments for landing, the capacity is naturally reduced, and for the purpose of planning, the figure of 40 should be used. However, when two runways are provided in each of the major wind directions the capacity of the field is tripled and even under favorable weather conditions 120 plane movements per hour are feasible. Thus, a major or secondary airport will have a capacity of 240 plane movements per day for a single runway plan and 720 plane movements per day for a dual runway. It thus can be seen that the present Vancouver Airport, if restricted to scheduled operations alone, would accommodate six times the present amount of scheduled traffic.

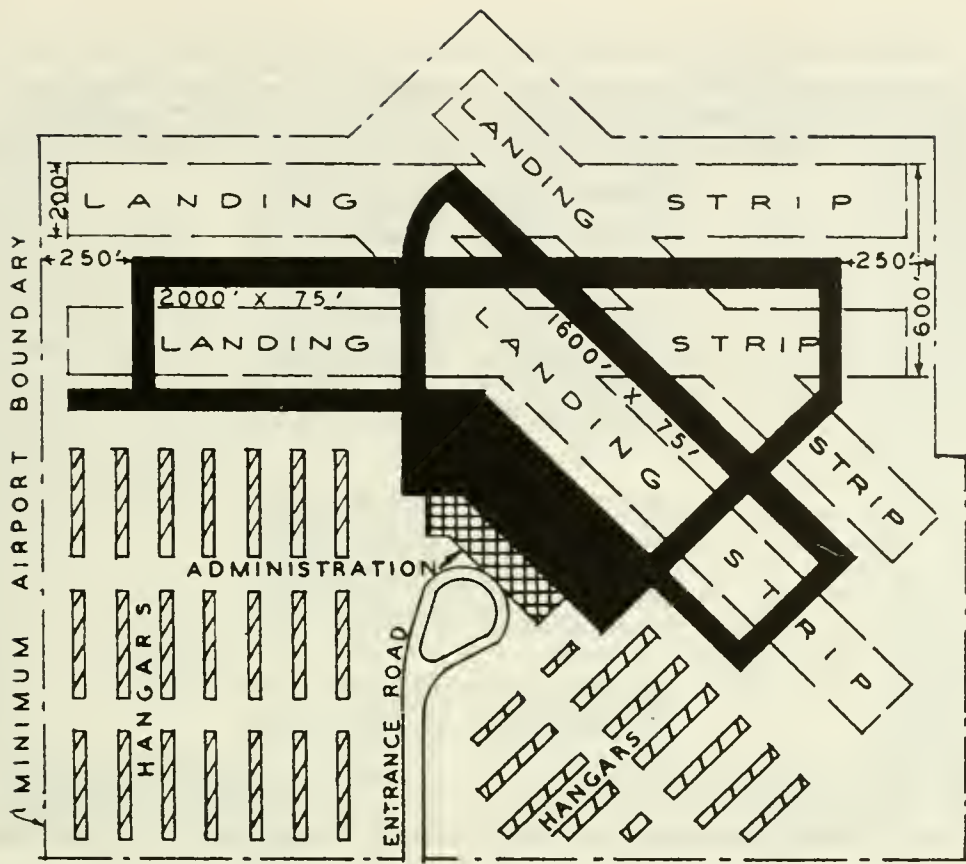
The above figures are admittedly theoretical. Actual operations at Vancouver Airport disclose that it is not possible, with present day equipment, to handle such a large number of plane movements per hour. In this connection, the following statement by Charles Stanton, former head of the United States Civil Aeronautics Administration, Washington, D.C., should be helpful in determining the movement of air traffic per hour that can be safely accommodated:

“Increasing the size of the airport probably doesn’t increase the number of schedules that can be handled. The bottleneck is the number that can come in and go out under instrument-flying conditions. With parallel runways, that is now only about 6 in and 6 out, in an hour. With improved equipment and procedures, we have some prospect of raising that up to 30 in, and 30 out, within a few years.”

The minor airports have a different method of operation. Often these fields do not contain paved runways and the small light planes land on the turf. Consequently, several plane movements could take place at one time. The capacity of a minor airport is generally considered to be 150 movements in the peak hour and 900 per day.

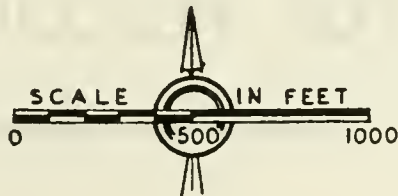
MAJOR PRINCIPLES CONTROLLING THE LOCATION OF AIRPORTS

I. THE SITE MUST BE ADAPTABLE. In and around Vancouver the topography is generally unfavorable for airport location. The sites for major airports which require a large land area are very limited. There are not even very many possible sites for secondary or minor airports. Any airport site should be relatively flat to avoid excessive grading cost. Wherever possible the site should be high to minimize possible obstacles and to avoid the frequent fogs occurring in the lowlands. The cost of the land must be reasonable where such large areas are to be acquired. The soil should allow a good foundation for the runways and the site must have good natural drainage, which is a difficult problem in the lowlands along the Fraser River. (At the Boundary Bay Airport, for example, the field is some five feet below extreme high water. It is dyked and surplus water must be pumped from the field).



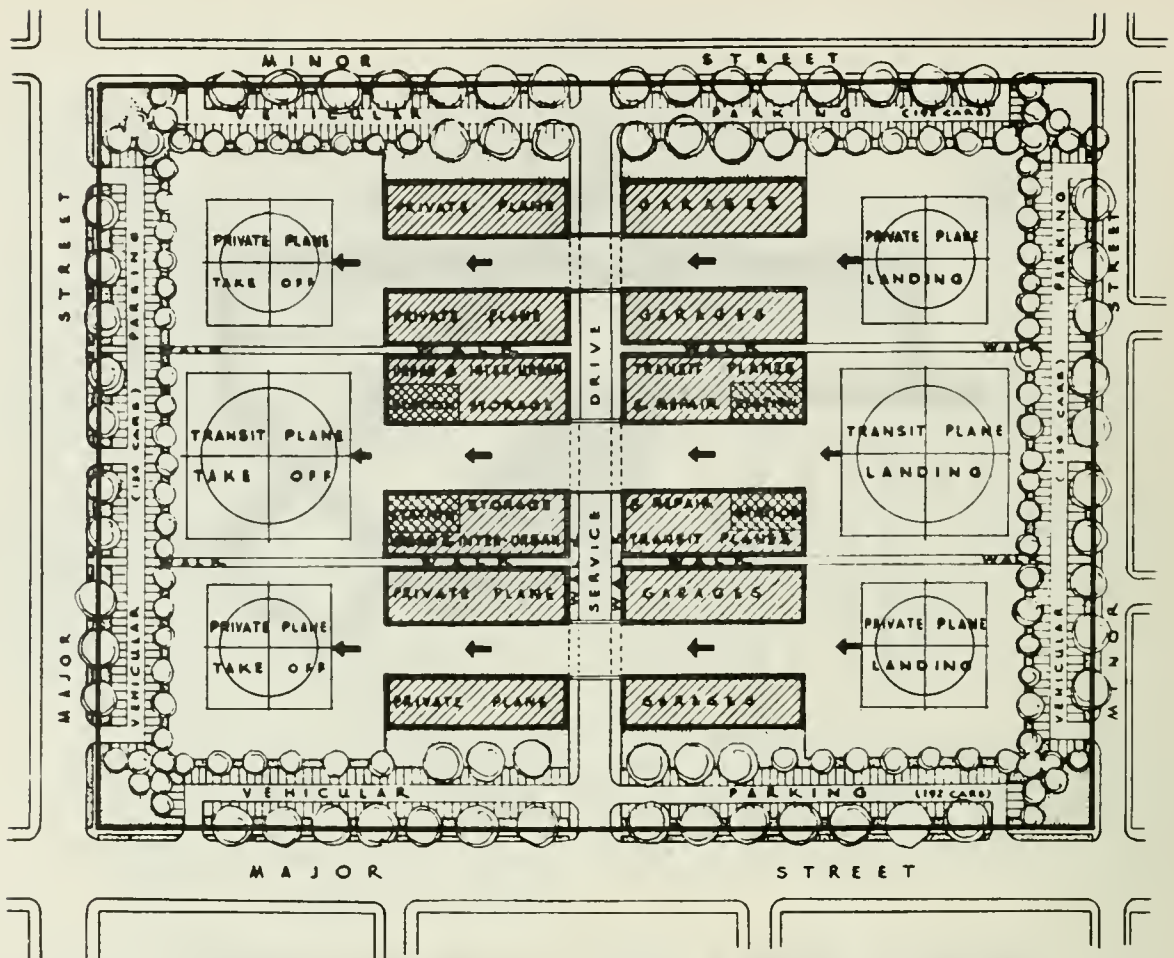
HANGAR SPACE FOR 350 AIRPLANES

TYPICAL MINOR AIRPORT



VANCOUVER TOWN
PLANNING COMMISSION

HARLAND BARTHOLOMEW & ASSOCIATES
TOWN PLANNERS



POSSIBLE DEVELOPMENT OF AN

URBAN LANDING FIELD FOR HELICOPTERS

GRAPHIC SCALE
0 100 200 300 400 500

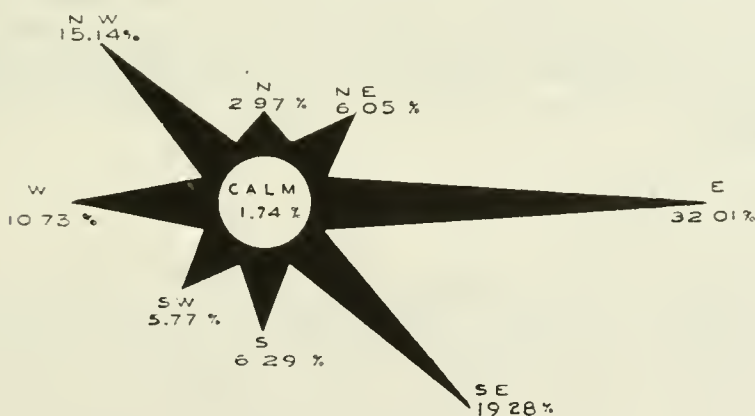
VANCOUVER
TOWN PLANNING COMMISSION

HARLAND BARTHOLOMEW & ASSOCIATES
TOWN PLANNERS

Water supply, gas and electric supply, and sewer facilities should be reasonably close to the airport site. The location of high tension electric wires must be given careful consideration since these are an extremely dangerous hazard.

2. THE SITE MUST NOT INTERFERE WITH THE EXISTING AND PROBABLE FUTURE URBAN AREA. The large numbers of planes will make it necessary to adopt rigid rules regarding operation over developed urban areas because of noise, confusion and possibility of accidents. For this reason airports, particularly the major airports, should be located beyond the urban area, in order to minimize the adverse effects of the airport upon residential development. It may be feasible, however, to develop a few minor airports or small landing strips for private planes fairly close within the developed areas.

WIND ROSE VANCOUVER AIRPORT AVERAGES FOR TEN YEAR PERIOD FEBRUARY 1936 — DECEMBER 1945



AVERAGE WIND VELOCITY: 7.96 MILES PER HOUR.
NOTE: NORTHWEST WIND MEANS WIND BLOW-
ING FROM NORTHWEST TO SOUTHEAST.

VANCOUVER
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Plate 6

3. THE SITE SHOULD BE CONVENIENTLY LOCATED. The advantage of air transportation is the saving of time. The relation of an airport site to the area it serves should receive careful consideration in order that the distance travelled be held to a minimum. Major airports should be located close to the centre of the city provided, of course, that the location does not interfere with the development of the urban area. The location of the airport must be carefully related to the existing and proposed major highways in the metropolitan area. It may well be that a site some distance removed from the business district will be quite accessible because of good highway connections.

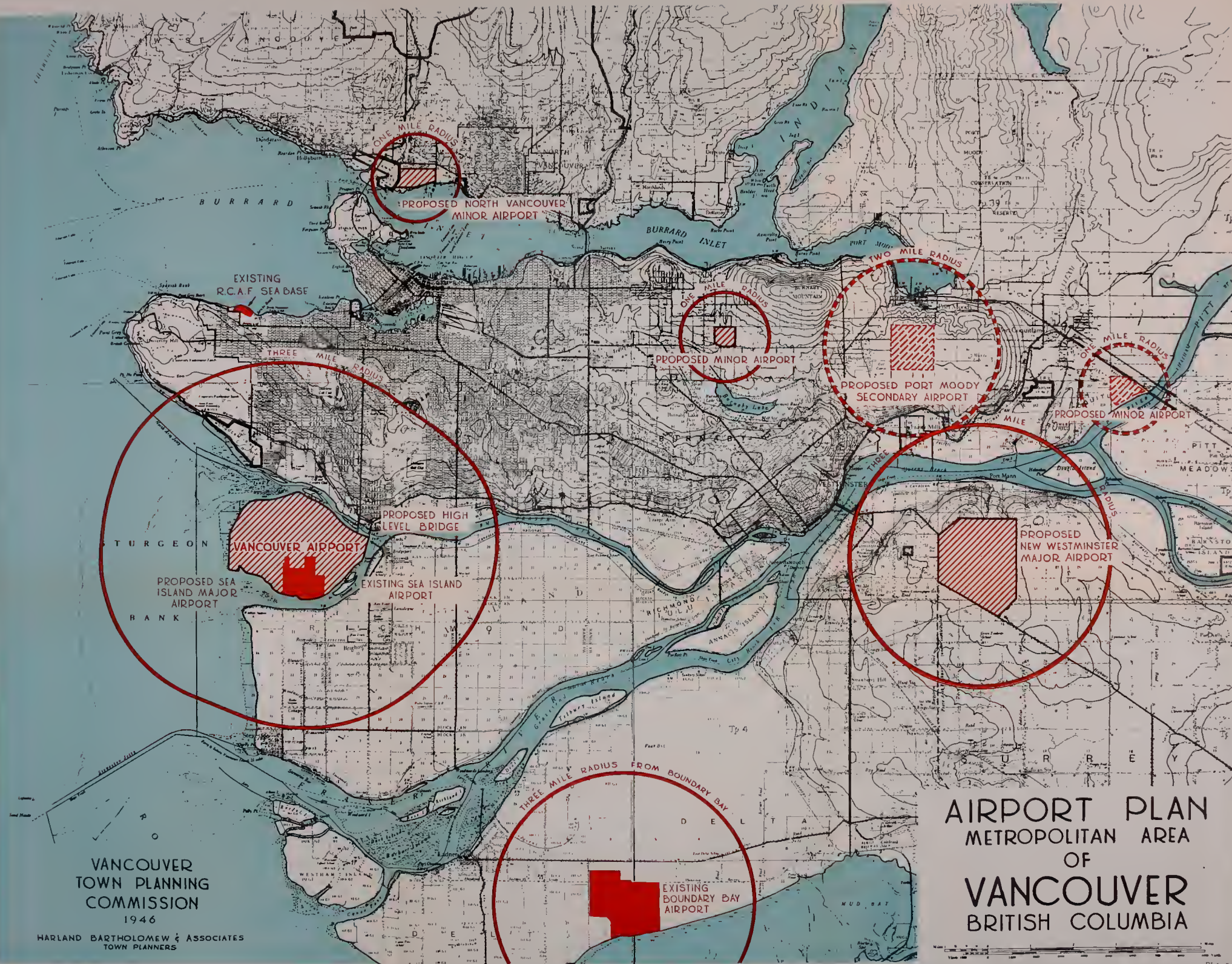
4. THE CHOICE OF SITES FOR AIRPORTS IS ALSO GREATLY INFLUENCED BY WIND DIRECTION. Planes take off and land into the wind and cross wind landings should be avoided. The wind rose for Vancouver for the ten year period 1936-1945 is shown on Plate Number 6. An astonishingly high percentage of the wind at the Vancouver Airport is in an east-west direction and in a north-west south-east direction. These two directions account for more than three-fourths of all wind movements. It has been found that runways aligned with the prevailing winds can also be used when there are cross winds of relatively low velocity. Consequently, the runways do not need to be as long in the Vancouver area for the north-east and south-west directions, since these need be used only when there is a relatively strong wind in these directions. Because of this factor, airport sites that provide for long runways in an east-west and north-west south-east direction and shorter runways in the north-south directions, may be quite satisfactory. Before final plans are made for any one airport site, the particular wind conditions affecting that site must be studied.

NUMBER OF AIRPORTS NEEDED

Studies of the number of airports that will be needed to serve the growth of air transportation over the next fifteen to twenty years have been made in a number of American cities. In a plan made for Dallas, Texas, it was estimated that thirteen airports would be required to serve a future population of 667,000. This is a ratio of one airport for each 51,000 persons. In a plan prepared for the Saint Louis metropolitan area a system of thirty-five airports was proposed to serve a future population of 2,000,000. In a plan made for Milwaukee, Wisconsin, the ratio was one airport for each 77,000 persons, and a plan made for Detroit, Michigan, proposed one airport for each 70,000 persons. The Dominion Ministry of Transportation has been using a general standard of one airport for each 50,000 persons which seems to be quite reasonable in view of the studies that have been made in these American cities

It was estimated that the future population of the Vancouver-New Westminster metropolitan area would be 650,000. With a ratio of one airport for each 50,000 persons, thirteen airports would be required.

The number of landings at the Vancouver Airport is now fourteen times the number fourteen years ago. A comparative increase could not be expected in the



VANCOUVER
TOWN PLANNING
COMMISSION
1946

HARLAND BARTHOLOMEW & ASSOCIATES
TOWN PLANNERS

AIRPORT PLAN METROPOLITAN AREA OF VANCOUVER BRITISH COLUMBIA

future, but if, in the next twenty years, the increase is only one-half as fast as it was in the last fourteen years, the airports in Vancouver would be called upon to accommodate 800,000 airplane movements per year by 1966. This would be approximately 2,100 plane movements in an average day. If the present ratio of scheduled and non-scheduled operations continues there would be 350 movements per day of scheduled aircraft and approximately 58 in a peak hour. One major airport with a dual system runway could accommodate this traffic. However, the non-scheduled commercial movements can be expected to be twice as large in volume as the scheduled movements, or approximately 116 in the peak hour. Thus, it would appear that the total peak hour operations of scheduled and non-scheduled commercial aircraft would require more than two major airports during the period covered by the plan. The remainder of the aircraft movements would take place at minor and secondary airports.

There are many other considerations that must enter into the design of the plan, however. The airports must be related to the different communities that make up the metropolitan area. Recognition must also be made of different weather conditions that prevail in the different parts of the urban area. Provision for alternate fields located at different elevations and widely separated would be highly desirable for major and secondary airports. Airports should be distributed between upland and lowland sites.

PROPOSED PLAN—TEN TO FIFTEEN-YEAR PLAN.

The proposed airport plan is shown on Plate Number 7. Ideally for this important metropolitan area, a system of thirteen airports should be contemplated consisting of (a) three major airports, one to serve regional scheduled air traffic, one to serve larger non-scheduled commercial planes, and one to serve military operations, (b) two secondary airports to serve non-scheduled commercial operations, large private planes and transient private planes, and (c) eight minor airports, six to serve private flying needs of the local population and two to be training fields. However, due to the rugged topography and on account of existing physical features, the removal of which would be economically unsound, and for various other reasons, only five, three major and two minor airports are recommended for immediate consideration and two others, a secondary and a minor, for future development. This plan should be consummated within from ten to fifteen years.

MAJOR AIRPORTS

The three major airports proposed consist of:

1. The present Vancouver Airport on Sea Island to be enlarged through acquisition of the entire island to serve as the major airport for transcontinental and foreign overseas service.

This field should be developed with 10,000 foot runways and a dual runway system eventually installed. This airport is well located to serve the Vancouver

business district, being only $7\frac{1}{2}$ miles away from the downtown area. Construction of the high level bridge over the north arm of the Fraser River, as proposed in the Major Street Plan, will greatly improve the accessibility of this field.

2. A major airport is proposed to serve the New Westminster portion of the metropolitan area. This airport would be located on an upland site, three miles southeast of the city of New Westminster. This site is relatively flat and unusually well adapted to the development of a major airport. The Trans-Canada Highway would traverse the southern and western boundaries of the field and offer unusually fine accessibility to the City of New Westminster. With construction of the express highway between New Westminster and downtown Vancouver, as proposed in the Major Street Plans for both communities, this site would also be quite accessible to the Vancouver business district. The site shown on this plan is sufficient to accommodate 7,500-foot runways. A single set of runways will be sufficient at this field during the period covered by this plan. This field is located along the radio beam of the Vancouver Airport and when developed will offer a good alternate terminal for scheduled aircraft during periods when the Airport on Sea Island is closed by fog.

3. The Boundary Bay Airport is shown on the plan as the military airport for the Vancouver area.

MINOR AIRPORTS

The minor airports proposed are as follows:

1. A minor airport to serve the North Vancouver and West Vancouver communities would be located along the lowland immediately east of the Capilano Indian Reserve. This is virtually the only possible airport site on the north shore of Burrard Inlet. It would be a particularly useful field, located only $3\frac{1}{2}$ miles from the Vancouver business district and quite accessible through use of the Lions' Gate Bridge. Due to the rugged terrain and the proximity of the bridge this field could be used only during periods of good weather.

2. A minor airport is proposed in the north central portion of Burnaby. It is located in the only area topographically feasible in this section of the metropolitan area and its development would have to be largely restricted to one east-west landing strip.

AIRPORTS RECOMMENDED FOR FUTURE CONSIDERATION

SECONDARY AIRPORT

There is a good site for a secondary airport on the high lands south of Port Moody in the District of Coquitlam. It is an almost ideal airport site, the only difficulties being its proximity to the proposed New Westminster major airport and the fact that a high tension power line traverses the site and would have to be relocated before the site could be used. Highway access to this site would also require improvement. Because of its comparatively level terrain and freedom from fog, this is an exceptionally fine site.

A minor airport is proposed immediately west of the Canadian Pacific Railway bridge over the Pitt River near Port Coquitlam. This would probably be a combination training and private flying field.

OTHER SITES CONSIDERED

Other sites which were given consideration but were not recommended for various reasons are as follows:

SECONDARY AIRPORT

South Burnaby

There is a good level site on the low land north of the North Arm of the Fraser River west of the City of New Westminster. It lies between the British Columbia Electric Railway and Canadian National Railway and has good access from Marine Drive. The site has satisfactory dimensions with respect to the east-west prevailing winds. On the other hand it is low lying and therefore, would be affected by fog. It is also in close proximity to the abrupt rise of ground to the north. The chief reason for its abandonment, however, is that a new high-tension transmission line has been constructed across the river immediately to the west of the site.

MINOR AIRPORTS

University Endowment Lands

Consideration was given to a site in the southeast portion of the University Endowment Lands. It was the only possible location to serve the potential plane owners of the City of Vancouver and the University Endowment Lands and it was realized that it would have been very convenient to students interested in all phases of aeronautics at the University. However, it was felt that this site was too close to the Vancouver Airport on Sea Island.

Northwest Burnaby

A tract of land in the northwest portion of Burnaby that was admirable from the viewpoint of accessibility, elevation and terrain, was also considered but was abandoned as it was too close to the high tension transmission line along Boundary Road and moreover, the area on three sides were well developed residentially. This site lies about half a mile east of Boundary Road between Hastings Street and Douglas Road.

Lulu Island

Two sites on Lulu Island, about four miles apart, were reviewed but are not recommended as they lie midway between the Vancouver and Boundary Bay Airports and would be within the sphere of operations of these major airports. Moreover, in this vicinity there are a number of broadcasting station aerial masts.

Strawberry Hill

This would have been an admirable site as a minor airport from the standpoint of elevation, terrain and general location but had to be dropped as a potential site owing to its proximity to the proposed New Westminster major airport.

Central Park, Burnaby

As inquiries had been made as to whether Central Park would be a suitable site for a minor airport, this area was inspected. It is a Dominion Government naval reserve—a timber reserve for the navy. The District of Burnaby leases it from the Provincial Government through an arrangement with the Dominion Government. Admittedly, it is admirably situated with respect to elevation, and to accessibility, being midway on the boundary between Vancouver and Burnaby. However, a maximum runway of only 1,800 feet could be obtained in an east-west direction, whereas a desirable minimum is 2,000 feet. Moreover, it would be somewhat costly to construct.

HELICOPTER FIELDS

No specific recommendations are made on the plan for the location of fields to serve helicopters. They can, of course, be accommodated at the minor airports where there would be facilities for garaging and servicing the planes. It is quite possible that additional sites for helicopter fields could be located eventually within developed parts of the urban areas that would necessarily be some distance removed from minor airports. In the development of such areas as the Capilano Indian Reserve, Hastings Park, Queen Elizabeth Park, and the Royal Canadian Air Force seaplane base at Jericho, consideration should be given to provision for fields for helicopters. The necessity for these developments are dependent, of course, upon the progress that is made in the perfecting of the helicopter.

SEAPLANE LANDINGS

No specific recommendations are made for development of facilities for seaplane landings in the Vancouver area. It is probable that the great majority of the planes used will be amphibious and will use the airports. The Vancouver Airport now has seaplane facilities and it may be that additional facilities of this type will ultimately be required in connection with the North Vancouver minor airport and along the Fraser River upstream from the City of New Westminster.

ACHIEVEMENT OF THE PLAN

It is most important that immediate steps be taken to achieve and protect a major airport plan in Vancouver. The Dominion Ministry of Transport is now authorized to license airports. After local agreement on the airport plan is reached it should be submitted to the Ministry of Transport for the latter's approval also. It is most important that regulation of airport location in the Vancouver area be based upon a long range plan.

Decisions must be reached also as to the division of responsibility for the construction and maintenance of the airports. Acquisition and development of all airfields shown on the plan should be a public responsibility, possibly financed through a combination of local, Provincial and Dominion funds. The available sites are so limited that all should be acquired as soon as possible. Virtually no alternate sites are available. Use of any of these sites for another purpose would have a serious effect upon the growth of air transportation in the Vancouver area.

APPENDIX I

AVIATION HISTORY IN VANCOUVER

For many years past, Vancouver has had an unusual interest and position in aviation. To assert that Vancouver is air-minded is somewhat trite and obvious. It is the genesis of aviation in Western Canada. Soon after the Wright Brothers' epoch-making flight in a "heavier-than-air" machine at Kittyhawk, North Carolina, in 1903, and the McCurdy-Baldwin flights during the Alexander Graham Bell-Glen H. Curtiss aeronautical experiments at Baddeck, Nova Scotia, in 1908-09, the "flying fever" became evident on the West Coast.



Courtesy of J. A. D. McCurdy.

THE SILVER DART MAKING THE FIRST FLIGHT IN THE BRITISH EMPIRE. BADDECK, N. S.,
23RD FEBRUARY, 1909. J. A. D. MCCURDY AT THE CONTROLS.

William W. Gibson, a native of Scotland, is credited with having built the first flying machine in Victoria in 1909, but there is no authentic record of a flight. On 25th March, 1910, Charles K. Hamilton of New York, made the first flight of ten minutes in a Curtiss pusher-type biplane from Minoru Park (Brighthouse) on Lulu Island. This plane was shipped from Seattle and assembled on the racetrack. In April, 1911, J. de Pries, from the United States, made another flight in a Curtiss from Minoru Park.

Of particular local interest is the following from the *Vancouver World* of 3rd May, 1911:

"On 28th April, 1911, the first successful airplane constructed on the Mainland went into action at Minoru Park. This machine was built by William Templeton, his cousin William McMullen, and his brother Winston Templeton. Construction had begun in the winter of 1909-10 at 1263 West 8th



Photo, Stuart Thomson.

THE TEMPLETON-McMULLEN BIPLANE BUILT IN VANCOUVER AND FLOWN AT MINORU PARK, 28TH APRIL, 1911. WINSTON TEMPLETON AT THE CONTROLS.

Avenue, and early in April the machine was transferred to the racetrack on Lulu Island where it proved its ability to rise from the ground. Many short hops were made, the longest being about 260 feet."

It is also of special local interest to record that William M. Stark of Vancouver made a sustained flight of twenty minutes in April, 1912, in a Curtiss machine, also from Minoru Park. On 20th April he took up the first passenger to fly in British Columbia, James T. Hewitt, the sports editor of the *Province*. He sat on a board lashed to the lower wing alongside the pilot. Mrs. Stark was the next passenger and was the first woman to fly in this province. On 14th June, 1914, Stark piloted a seaplane from Coal Harbour through the First Narrows and around Stanley Park.



Courtesy of City Archives.

WILLIAM STARK'S PLANE AT MINORU PARK, MURTON A. SEYMOUR (LATER MAJOR, R.F.C.) OF VANCOUVER AT CONTROLS.

killed in a crash on a roof in Victoria on 6th August, 1913, ten days after their marriage.

On 31st July, 1913, the first Canadian woman pilot, Mrs. Alys McKey Bryant piloted a Curtiss biplane at Minoru Park. Her husband, John Milton Bryant, piloted the first seaplane in British Columbia but was

The first Canadian parachute drop from an airplane — the fourth successful one ever made—took place at Hastings Park on 24th May, 1912. This was done by Charles Saunders who jumped with no body harness attaching him to his parachute. He gripped a bar fastened to the parachute by his hands only.

After World War I interest in aviation was revived. On 3rd March, 1919, Edward Hubbard took off from Coal Harbour and delivered the first airmail to Seattle. The first flight across the Strait of Georgia was made on 13th May, 1919, by Captain Alfred Eckley in a Curtiss J N-4 land plane. He took off from Minoru Park, landed at the Willows Racetrack in Victoria and returned to the Lulu Island racetrack.

On 9th July, 1919, Lieutenant M. M. MacDonald, of the Royal Flying Corps, carried R. H. Gale, then Mayor of Vancouver, aloft from Lulu Island. This was the first occasion in Canada upon which an incumbent chief magistrate had flown.

At dawn on 7th August, 1919, one of Vancouver's war pilots, Captain Ernest C. Hoy of the Royal Flying Corps, flew from Minoru Park and successfully crossed the Rocky Mountain Range to Calgary, stopping at several points to refuel. The flight was accomplished in 12 hours and 34 minutes. On the return trip, unfortunately, Captain Hoy crashed between the Rockies and Vancouver, but sustained only slight injury.

The Jericho Air Station, a seaplane base, on the south shore of English Bay, was laid out by William Templeton in 1919 for the Department of National Defence.

The first trans-Canada airmail flight ended in Vancouver on 13th October, 1920, with the delivery of special letters from Halifax, Nova Scotia.

In 1928, the newly formed company known as British Columbia Airways, purchased a Ford Trimotor airplane and carried on a service from Vancouver to Victoria and Seattle. A 40-acre field, immediately north of Lansdowne Park on Lulu Island, was rented as a landing field. After many successful trips, this plane crashed in the late summer of 1928 between Victoria and Seattle.

The City of Vancouver then leased this Lulu Island property and erected a small hangar. The Aero Club of British Columbia was formed and a new company, Dominion Airways Limited, began operations as a school of flying operations and undertook charter flying.

A strong and sustained agitation for a larger and more modern airport culminated in a by-law for \$300,000 being passed by a large majority of Vancouver ratepayers in May, 1929, "to purchase land on Sea or Lulu Islands for the purpose of establishing an airport . . .". Acreage on Sea Island was purchased and in December, 1929, a second by-law was passed for a like sum to undertake the development of the airport. William Templeton, who, it will have been noted, built and flew his own plane in 1911, was appointed Airport Superintendent. He had been an officer in the Royal Naval Air Service in World War I and was stationed on the historic Island of Malta, G. C., from early in that war to 1917. In January, 1930, he was authorized to design and construct an airport and seaplane harbour on the

500-acre area on the south side of Sea Island. This property has a mile of river frontage along the Middle Arm of the Fraser River.

Construction began in April, 1930, and the corner-stone of the Administration Building was laid on 1st May, 1931, by His Honour, Lieutenant-Governor R. Randolph Bruce, who arrived from Victoria by seaplane for the ceremony. On the same day, William Templeton was given the honour of being the first passenger to fly from the new Vancouver Airport, Pilot Jones-Evans at the controls.

Vancouver's Airport was officially opened on 22nd July, 1931, by the late Honourable Simon Fraser Tolmie, then Premier of British Columbia. A large air show marked the official opening. The three outstanding features were the famous Royal Canadian Air Force Siskins from Eastern Canada, a United States Army Air Force Bombardment Squadron, and an autogyro from Montreal.



Gordon Photo.

INAUGURATION OF UNITED AIR LINES SERVICE, VANCOUVER AIRPORT, 1ST JULY, 1934.

Since then, Vancouver's Airport has grown to vast proportions compared with its small beginnings. On 1st July, 1934, the United Air Lines inaugurated its service to Seattle. On 7th July, 1937, the Trans-Canada Air Lines made their first survey flights east to Winnipeg and in the same month the Dominion Minister of Transport, Honourable C. D. Howe, made a successful dawn to dusk flight from Montreal to Vancouver in a Lockheed 10 A, piloted by Squadron Leader Tudhope. On 2nd September, 1937, the newly established Trans-Canada Air Lines took over the Vancouver-Seattle route until then operated by the Canadian Airlines Limited. On 19th January, 1938, the Vancouver Airport runway lights were turned on for the first time. The first night flight was made by Trans-Canada Air Lines pilots E. P. H. Wells and F. M. McGregor in a Lockheed 10 A. The Trans-Canada Air Lines then began to "blaze the sky-trails" over the Rockies. On 24th January, 1938, training flights were inaugurated under the direction of Captain William Straith. On 1st April, 1939, passenger service was commenced.



Courtesy Vancouver Sun.

TRANS-CANADA AIRLINES INAUGURAL FLIGHT FROM VANCOUVER AIRPORT, 1ST APRIL, 1939.

On 19th February, 1938, the first Edmonton to Vancouver, via Fort St. John, flight was made in a Waco custom plane by Pilot Sheldon Luck. The service was operated by the United Air Transport Limited, of Edmonton. This company changed its name several times and various types of planes were used. Finally, early in 1942, the Canadian Pacific Air Lines took it over and operated from Vancouver to Northern British Columbia, Yukon, MacKenzie and the Arctic Ocean. The equipment used on these northern routes was standardized to the Lockheed 14 and Lodestar. This line also took over a seaplane service to Victoria, Zeballos and Port Alice on Vancouver Island.

The skill and endurance of the "bush pilot" in transporting passengers, express and freight to otherwise inaccessible northern areas, have not only assisted materially in developing this country but have demonstrated the usefulness of the transport airplane.

Much of the credit for the creation and development of Vancouver's Airport and its successful operation must be given to the Airport Manager. In no other

place could there be found an air-minded personality with so many facets, any one of which would be a highly desirable characteristic in an airport manager.

A native of Northern Ireland, a practical builder and contractor with both engineering and architectural training, a muse with a propensity for music and poetry, a flair for engines and mechanics—especially aeronautical, an adventurous spirit, and a patriot who flew and fought in the “crates” of the early days of World War I, William Templeton is a man of many parts and withal, master of many. He is a dreamer wherein aviation is concerned, he foresaw its future, and the part Vancouver was destined to play, long before any of his fellow citizens. However, he has been practical in his visions. He has never permitted his judgment to be



Courtesy Vancouver Sun.

THE ARRIVAL OF THE TRANS-CANADA AIR LINES “LANCASTRIAN” AT VANCOUVER AIRPORT ON 10TH JULY, 1946, AFTER A 6,000-MILE FLIGHT IN 28 HOURS’ FLYING TIME, MARKED THE FIRST THROUGH FLIGHT FROM UNITED KINGDOM.

swayed by any aviation chimera—on the contrary, he has always displayed an uncanny gift of advising along sane lines with the result that Vancouver has been kept to the fore in aviation development yet with the greatest economy.

It truly may be said that it was largely due to the confidence which the citizens had, even in the early stages, in his ability, wise counsel and judgment, that the by-laws for airport development were passed.

The consummate skill and meticulous care that have been characteristic of his administration have paid dividends in the showing of new records for the airport each year and in the remarkable achievement of not one accident causing serious injury in the fifteen years of operation.

His love of and his devotion to his adopted city is almost a legend, and in this regard Vancouver is indeed most fortunate because many blandishments have never lured him to other more prominent and more lucrative posts.

The highly efficient condition attained by Vancouver’s Airport and Seaplane Harbour in peacetime was demonstrated forcefully in the contribution it made during World War II in the defence of the nation. With little or no interference

to commercial schedules the airport was used in many types of military operations. The Dominion Government took over the airfield early in the war and a vast amount of training was carried out by the Royal Canadian Air Force. As this report goes to print the Vancouver Airport is being returned to the City by the Government.

Early in September the Australian National Airways announced the inauguration of service from Sydney to Vancouver, via Fiji, Hawaii and San Francisco, using 44-passenger Douglas aircraft, and that the first plane would arrive at the Vancouver Airport on 18th September, 1946.



Courtesy Vancouver Sun.

DEPARTURE OF FIRST 4-ENGINE DOUGLAS PLANE FROM VANCOUVER AIRPORT ON REGULAR SCHEDULE OF UNITED AIR LINES, 1ST AUGUST, 1946.

APPENDIX II

AIRPORT MANAGER'S REPORT, JULY, 1946

AIRPORT AND SEAPLANE HARBOUR
WM. TEMPLETON
AIRPORT MANAGER



TELEPHONE LANGARA 0258

VANCOUVER, A. M. F., B. C.

8th July, 1946.

The Chairman and Members,
Harbours, Utilities and Airport Committee,
City Hall, Vancouver, B. C.

Gentlemen:

FIFTEEN YEARS OF PROGRESS

Vancouver Airport is *Fifteen Years Old* this month and I am sure we are all justifiably proud of the progress that has been made in a decade and a half. When the Airport was officially opened for business on July 22nd, 1931, there were only four small aircraft operating. There were no air services to other cities, no field lighting, no radio, no weather forecasting facilities, no air traffic control, no repair plants, no restaurant. The road leading to the Administration Building was narrow and full of holes, and the one paved runway, 2,400 feet long, had to serve for practically all wind directions.

Today, the Airport is one of the busiest and certainly one of the most important in Canada. It is the Pacific operating centre of Trans-Canada Air Lines and of Canadian Pacific Air Lines. It is the northern terminus of United Air Lines. Over four hundred passengers arrive or depart daily by air and not a single one of the 442,077 passengers who have flown have been even slightly injured in an accident at the Airport during the fifteen years of its existence.

Some idea of the increases in the number of passengers carried and the amount of air mail and air express handled is conveyed in the following comparisons:

Passengers . . .	Full year, 1935	4,782	(Average 13 Daily)
	March, April, May, 1946 . . .	38,115	(Average 414 Daily)
Mail	Full year, 1935	4,776 lbs.	
	March, April, May, 1946 . . .	205,431	"
Air Express . . .	Full year, 1935	3,210	"
	March, April, May, 1946 . . .	129,652	"
Scheduled			
Flights	Full year, 1935	335	
	March, April, May, 1946 . . .	3,148	

Our records show that since July, 1931, a total of 442,077 passengers have arrived or departed, and that 5,275,519 pounds of air mail and 1,395,976 pounds of air express have passed through the gates.

A Sub-Post Office at the Airport operates continuously and handles all regular postal business. The radio and meteorological departments are the equal of any in the Dominion and function on a 24-hour basis.

During the war the boundaries of the landing field were considerably extended and runways lengthened and widened. Today, the Airport actually covers an area larger than LaGuardia Field, New York, which is 550 acres.

The importance of the Airport to this City cannot be over estimated. By Trans-Canada Air Lines, air mail letters are received here from London, England, in less than three days. A passenger recently arrived at his home on Lulu Island from Amsterdam, Holland, in forty-eight hours, with stops in New York and Seattle of several hours. American tourists and business men, flying their own planes, arrive here daily. The distance from Los Angeles to Vancouver by air is less than seven hours.

There are now eleven daily return trips to Victoria. There are five trips, each way, across the mountains, and four trips each way between Seattle and Vancouver, daily. There is a daily trip each way to Northern British Columbia and the Yukon, and twice-weekly trips to Queen Charlotte Islands and Prince Rupert.

Vancouver Airport is now an established public enterprise, which in fifteen years has contributed in no small way to the growth of the community, and has definitely placed this city on the air maps of the world.

Yours respectfully,

(Signed) WILLIAM TEMPLETON,
Airport Manager.

